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## SCIENCE STANDARD 5

***All students will integrate mathematics as a tool for problem solving in science, and as a means of expressing and/or modeling scientific theories.***

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Even more obvious than the link between science and technology is the intimate relationship between science and mathematics. Science cannot be practiced, taught, or learned without the usefulness of mathematics as a language and an essential problem solving tool. *Benchmarks for Scientific Literacy* consistently refers to mathematics as just one of many “other sciences.” Therefore, as students deal with increasingly complex scientific concepts, they will rely more heavily on their mathematical skills. Indeed, their ability to study more advanced physical theories will ultimately depend on their level of mathematical sophistication. A developmental overview of those skills can be found in the *New Jersey Mathematics Curriculum Framework*. The total integration of those skills with the learning of science is the intent of this standard.

From the earliest grades, students should find science and mathematics virtually indistinguishable. Beginning with counting, young students will progress quickly to making simple measurements (introducing them to units), which will lead, in turn, to collecting and displaying data. In the middle and upper grades, students should consistently be asked to use mathematics to analyze and interpret experimental results, determining relationships among variables, and deriving mathematical expressions that describe physical phenomenon. At the most challenging level, they should begin to appreciate the importance of a mathematical model as a valid representation of an otherwise unobservable entity.